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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Matus, Tim A.
Serial No.	:	10/605,931
Filed	:	November 6, 2003
For	:	One-Piece Consumable Assembly
Group Art No.	:	3742
Examiner	:	Paschall, M.

CERTIFICATION UNDER 37 CFR 1.8(a) and 1.10

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Commissioner for Patents
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APPEAL BRIEF PURSUANT TO 37 C.F.R. §§1.191 AND 1.192

Dear Sir:

This Appeal Brief is being filed in furtherance of the Notice of Appeal filed on March 8, 2006 and in response to the Notice of Panel Decision from Pre-Appeal Brief Review mailed on May 19, 2006.

1. REAL PARTY IN INTEREST

The real party in interest is Illinois Tool Works Inc., the Assignee of the above-referenced application by virtue of the Assignment to Illinois Tool Works Inc., recorded on November 10, 2003, recorded at reel 014115, frame 0687.

2. RELATED APPEALS AND INTERFERENCES

Appellant is unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellant's legal representative in this Appeal. Illinois Tool Works Inc., the Assignee of the above-referenced application, as evidenced by the documents mentioned above, will be directly affected by the Board's decision in the pending appeal.

3. STATUS OF THE CLAIMS

Claims 1–27 are currently pending, and claims 1–27 are currently under final rejection and, thus, are the subject of this appeal.

4. STATUS OF AMENDMENTS

The Appellant has not submitted any amendments subsequent to the Final Office Action mailed on November 3, 2005.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

A plasma torch consumable assembly (38) is claimed. Application, pg. 8, lns. 1-2. The plasma torch consumable assembly (38) contains a shield cup (64), an electrode (42) integrally connected to the shield cup (64), and a tip (58) integrally connected with the shield cup (64) and the electrode (42). Id., lns. 1-3. Together, the shield cup (64), electrode (42) and tip (58) form a one-piece assembly (38) wherein the tip (58) is constructed to secure the one-piece assembly (38) to a torch body (36). Id., lns. 2-5. Additionally, a swirl ring (50) having a first side integrally connected to the electrode (42) and a second side integrally connected to the tip (58) can be incorporated into the plasma torch consumable assembly (38). Id., pg. 5, lns. 9-12. A shield (74) can also be integrally connected to an end of the shield cup (64). Id., pg. 6, ln. 5. The entire consumable assembly can then be configured to be snap-fittable to the plasma torch body (36). Id., pg. 5, lns. 24-25.

Another claim of the invention calls for a plasma cutter (10) having a power source (12) with a torch (16) connected thereto (Fig. 1). Id., pg. 8, lns. 8-9. The power source (12) is configured for conditioning power into a form usable by a plasma cutting process. Id., lns. 9-10. The conditioned power is sent to the torch (16), which is configured to effectuate the plasma cutting process. Id., lns. 11-12. A one-piece consumable assembly (38) is also part of the plasma cutter (10) and is comprised of a cap (64), a tip (58) fixedly connected to the cap (64), and an electrode (42) fixedly connected to the cap (64) (Fig. 2). Id., lns. 12-13. The tip (58) is constructed to snap-fit the consumable assembly (38) to the torch (36). Id., lns. 14-15. This one piece assembly (38) is assembled prior to being connected to the torch. Id., lns. 13-14.

A further claim of the invention calls for a replacement plasma torch consumable kit made up of a shield cup (64), an electrode (42), and a tip (58) constructed to be attached to a torch (36). Id., lns. 18-21. At least two of the shield cup (64), electrode (42), and tip (58) in the replacement plasma torch consumable kit are press-fit to one another. Id., lns. 20-21. Additionally, each of the shield cup (64), electrode (42), and tip (58) can be secured to one another to form a one-piece assembly (38). Id., pg. 7, lns. 18-26.

Another claim of the current invention calls for a method of manufacturing a plasma torch consumable assembly which includes the steps of providing an electrode, providing a tip, and integrally connecting the electrode within a perimeter of the tip into a single unitary consumable structure. Id., pg. 8, lns. 23-26. Additionally, the step of providing a shield cup and integrally forming the shield cup in the single unitary consumable structure can also be taken. Id., pg. 7, lns. 18-22.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL:

The Examiner has rejected claims 1-27 under 35 U.S.C. §103(a) as being unpatentable over Luo (USP 5,856,647) in view of Raney et al. (USP 4,967055).

7. ARGUMENT

As discussed in detail below, the Examiner has improperly rejected the pending claims. The Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under §103(a) of Chapter 35 of the United States Code.

Contrary to the Examiner's assertion, Appellant respectfully disagrees that the art of record supports a 35 U.S.C. §103(a) rejection of the present claims. The burden of establishing a *prima facie* case of obviousness falls on the Examiner. MPEP §2142. To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2143.

The Examiner rejected claims 1-27 under 35 U.S.C. §103(a) as being unpatentable over Luo in view of Raney et al. The Examiner stated that "Lou teaches the claimed plasma torch including shielding cup, electrode swirl ring, nozzle or tip, which all connect together for torch operation" and that "[t]he claims set froth [sic] that the components such as cup, wlectrode [sic] and tip are connected to form a one-piece assembly to the torch body." Office Action, June 16, 2005, p. 2 ¶3. Thus, the Examiner stated that Luo teaches the basic torch as claimed, but that it does not teach combining multiple torch elements into an integral element. The Examiner further stated that, "[i]n this respect the patent to Raney et al. is applied for teaching that the more parts the operator has to assemble the greater the likelihood of improper assembly ..." and that "Raney et al. teach [sic] that some of the parts can form an assembly, which can then be secured to the torch head." Id., p. 2 ¶3, p. 3 ¶1. Thus, the Examiner concluded that it would have been an obvious modification to adapt the Luo system with preassembled components, as claimed in Raney et al, so that safer use would occur, with the additional benefit of easier assembly.

In the Response of August 19, 2005, Appellant responded to the Examiner's rejection stating, in part, that "Applicant does not necessarily disagree that Raney et al. discloses a torch assembly wherein 'some of the parts can form an assembly' however, this is not what is called for in the present claims." Response of August 19, 2005, pg. 6 ¶2. Appellant went on to state that "[t]he tip, electrode, and shield cup of Raney et al. are not integrally connected as called for in [the claims] if in-field assembly is allowed with omission of one or more of the parts of the assembly." Id., pg. 7 ¶2. Appellant directed the Examiner's attention to MPEP §2143 which states that for the Examiner to establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings and the prior art reference (or references when combined) must teach or suggest all the

claim limitations. Thus, the Appellant argued that that which is called for in claims 1-27 is not specifically taught, disclosed, or suggested in the art of record.

In the Final Office Action of November 3, 2005, the Examiner maintained the §103(a) rejection under Luo and Raney et al. stating that "[i]t is clear that since Luo teaches the basic torch structure claimed in the instant invention, and since Raney et al. teach as specified above that combining multiple; [sic] torch elements into larger integral components is beneficial, the Examiner submits that one of ordinary skill in the art would; [sic] find it well within that level of ordinary skill to combine multiple torch components into integral ones." Final Office Action, November 3, 2005, pg. 2 ¶2. The Examiner further asserted that "proper motivation is taught by Raney et al., to enable the references as combined, as proper." Id., pg. 3 ¶1.

Appellant respectfully disagrees with the Examiner's continued rejection under the prior art. Appellant believes that a *prima facie* case of obviousness cannot be made based on the art of record because, as will be shown below, (1) there is no suggestion or motivation to modify the cited references to come up with the present invention in a way done so by the Examiner, other than Appellant's own teaching; (2) the combination of the references would not have a likelihood of success, at least not of the claimed invention; and (3) all the elements of the present claims are not present in the references. The Examiner has not established any of the three basic criteria required under MPEP §2143 to sustain a §103(a) rejection. Appellant will now address each of the three criteria required by MPEP §2143.

Lack of suggestion or motivation to modify the combined references:

The Examiner maintains that it would have been an obvious modification to adapt the Luo system with preassembled components, as claimed in Raney et al., so as to promote safer use and easier assembly. Appellant does not necessarily disagree that Raney et al. discloses the benefits of some system components being preassembled. However, nothing in Raney et al. suggests a modification to the system disclosed therein that would lead to that which is called for in the present claims. In fact, the prior art teaches the benefits of a configuration that is markedly different from the current invention. There is no suggestion or motivation in the art of record to modify the references in the manner done by the Examiner to achieve the claimed invention, absent Appellant's disclosure.

Raney et al. discloses a system in which three separate and distinct elements are set forth in the front-end assembly for plasma cutting. See Raney et al., col. 3, lns 11-14. Additionally, it describes in detail the re-assembly that is required by an operator when replacing individual components of this three-piece assembly. The arrangement disclosed in Raney et al. "[c]reates a stacked configuration in the front-end assembly which adds an additional measure of safety in the event an operator fails to properly re-assemble the torch in the field." Raney et al., col. 7, lns. 50-53. Therefore, there is the possibility that an operator can indeed re-assemble incorrectly. Raney et al. further states that "[i]f an operator is replacing one or more worn parts in the field, it is possible to omit one or more parts during re-assembly." Raney et al., col. 7, lns. 53-55. Thus, Raney et al. expressly discloses that each of the three separate parts of the front-end assembly is individually removable, and further, that in-field assembly of the stacked consumable assembly is allowed even with omission of one or more of the three parts of the assembly. This is in stark contrast to the configuration set forth by the current invention, which calls for an integral one-piece consumable that can be easily manipulated by an operator and which removes the possibility of re-assembly errors by setting forth that the entire one-piece assembly be replaced when replacing worn out components. The system disclosed in Raney et al. is the exact type of system that is meant to be addressed by the present Application, so as to resolve the issue of improper assembly. The combination of the Luo and Raney et al. systems does not resolve the assembly shortfalls addressed by the presently claimed invention, and there is no motivation set forth in either reference to modify the systems therein to come up with the present invention.

Not only does Raney et al. fail to address use of a one-piece assembly as described above, it actually teaches away from the current invention by disclosing the benefits of the three separate and distinct element construction of the assembly disclosed therein. Raney et al. states that the three-part, front-end assembly is "relatively easy to manufacture" "facilitates replacement of worn or damaged parts" and that the unique "arrangement of the front-end assembly provides a significant measure of protection over the prior art." Raney et al., col. 3, lns. 18-21, col 8, lns. 3-6. Thus, Raney et al. provides specific reasons for the separate and distinct nature of the elements disclosed therein. The Examiner's conclusion that one of ordinary skill in the art would be motivated to provide a one-piece assembly as presently claimed directly contradicts the express disclosure of Raney et al. that the (1) electrode, (2) the tip and swirl ring, and (3) the nozzle be three separate and distinct elements of the assembly. This disclosure of Raney et al. is explicit and cannot simply be ignored or discounted. Furthermore, the disclosure of Raney et al. that the

three-piece assembly "facilitates replacement of worn or damaged parts" directly contradicts the Examiner's assertion that the one-piece consumable assembly of the claims is suggested therein. No degree of interpretation of the reference is required. The statements of the reference are explicit and teach away from the one-piece assembly called for in the present claims and Raney et al. provides specific reasons for the separate and distinct nature of the elements.

To conclude that one of ordinary skill in the art would be motivated to unify the three piece assembly of Raney et al. into a single unitary assembly is a suggestion that is diametrically opposed to what the art of record teaches. It seems apparent that the 'motivation' to combine and modify the references in the manner suggested by the Examiner has been derived directly from Appellant's application. The references, specifically Raney et al., teach away from the claimed invention because they allow for operator error in re-assembly of the individual components and recite the specific benefits of a three-piece assembly. The Examiner has utilized Appellant's own disclosure as a blue print in an attempt to derive the claimed invention from the art of record.

In as much as the art of record teaches away from the presently claimed invention and that modification of the references in the manner suggested by the Examiner is contrary to that specifically disclosed in the references, and that any modification to the combination of Luo and Raney et al. is the result of impermissible hindsight, the art of record does not include the motivation or suggestion to modify the references in the manner done by the Examiner. Accordingly, a rejection under §103 cannot be sustained and Applicant asserts claims 1-27 are patentably distinct over the art of record.

Lack of reasonable expectation of success:

The second prong of the *prima facie* case for obviousness requires that the Examiner also show that if the references were combinable in a manner as suggested by the Examiner that there would be a reasonable expectation of success in arriving at the invention resulting from such a combination. The references make it clear that one skilled in the art would not be successful in arriving at the present invention by merely combining the teachings of the art of record. That is, as discussed above, the references are clear that a multi-piece consumable assembly is what is being set forth. Raney et al. describes in detail the benefits of a three-piece front-end assembly capable of re-assembly in the field by an operator so as to allow for replacement of individual parts. See Raney et al., col. 3, lns. 18-28 and col. 8, lns. 3-11. The combination of the references as suggested by the Examiner falls far short of that which is called for in the current claims.

The combination of the disclosures of Luo and Raney et al. does not yield the claimed invention. The nature of both of these references is disclosed in the Background of Appellant's Application. That is, both systems require operator assembly of individual parts of a consumable assembly. These are the very systems that are addressed in the present Application and the references fail to address the problems associated with requiring an operator to handle and assemble the relatively small components of a consumable assembly while wearing large welding gloves. While the prior art claims to improve safety for an operator as a result of the disclosed three-piece assembly in Raney et al., the combination of the two systems still does not resolve the assembly shortfalls addressed by the presently claimed invention. The art of record discloses no more than the same problems discussed in the Background of Appellant's Application as cited above. Combining the references does not result in a one-piece consumable that can be easily manipulated by an operator and that helps to eliminate the problem of assembly errors while in the field. The combination of Luo and Raney et al. allegedly results in a device that improves safety conditions for an operator, but still requires assembly of a three-piece front-end assembly in which various pieces are capable of being omitted through operator error. To conclude otherwise is contrary to the express disclosure of the references. As such, it is clear that one skilled in the art would not have a reasonable expectation of success in arriving at the present invention by merely combining the teachings of the art of record.

References failure to teach or suggest each and every claim limitation:

As stated earlier, in order to establish a *prima facie* obviousness rejection, one requirement is that the combined references include all of the elements of the claimed invention. The combination of Luo and Raney et al. does not include each and every element of the claims as required to establish a *prima facie* obviousness rejection.

The current invention is an improvement over anything disclosed in the Examiner's prior art references. Claim 1 calls for, in part, a plasma torch consumable assembly having a tip integrally connected with a shield cup and an electrode to form **a one-piece assembly** wherein the tip is constructed to secure the one-piece assembly to a torch body. Claim 2 adds that a swirl ring which is integrally connected to the electrode on a first side and integrally connected to the tip on the second side. Claim 5 adds that a shield is integrally connected to an end of the shield cup. Claim 10 adds that the consumable assembly is configured to be snap-fittable to a torch

body of the plasma cutter. Claim 12 calls for, in part, **a one-piece consumable assembly** which includes an electrode and a tip fixedly connected to a cap wherein the tip and constructed to snap-fit the consumable assembly to the torch. Claim 17 defines a replacement plasma torch consumable kit wherein at least two of a shield cup, an electrode, and a tip are press-fit to one another. Claim 18 adds that each of the shield cup, electrode, and tip are secured to one another to form a one-piece assembly. Claim 22 calls for a method of manufacturing a plasma torch consumable assembly which includes, in part, the step of integrally connecting an electrode within a perimeter of a tip in **a single unitary consumable structure**. Claim 23 adds the step of integrally forming a shield cup in the single unitary consumable structure.

The Examiner relies upon Raney et al. for suggesting that it would have been obvious to one of ordinary skill in the art that it is beneficial to combine multiple torch components into integral ones as set forth in the current invention. Applicant respectfully believes that Raney et al. fails to teach, disclose or suggest all of the elements set forth in the claims above. Raney et al. teaches a two part electrode assembly, a swirl ring that is attached to a nozzle, and three distinct and separate electrode, tip, and nozzle elements. In fact, Raney et al. specifically states that "[t]he invention includes *three separate and distinct* elements: (1) an electrode having an integral, hollow, interior cooling tube, (2) a tip element with an integral swirl ring, and (3) a nozzle." Raney et al., col. 3, lns. 11-14. The three separate and distinct elements are stacked and nested together to form a front-end assembly. As shown in Fig. 2, the front end assembly 50 consists of an electrode 28 that nests inside of a tip and integral swirl ring 26, which in turn nests inside of a nozzle 14. Raney et al. describes the three elements as being stacked and nested together. This arrangement is clearly different from what is currently claimed, in that the individual components are not affixed to each other or integrally connected in any way and are individually removable from the stacked configuration. This is not what is currently claimed. That is, Raney et al. does not teach or suggest a one-piece or unitary consumable assembly as claimed and, in fact, Raney et al. expressly states that electrode, tip and swirl ring, and nozzle are "three **separate and distinct** elements." This express disclosure cannot simply be ignored.

It is clear that Raney et al. fails to disclose that which is called for in the current invention. Each of the claims recited above specifies a plurality of components, which of those components are connected, and how those components are connected. Raney et al. simply does not teach or suggest that the electrode, tip, and nozzle elements disclosed therein are formed as a one-piece or unitary assembly as is called for in the present claims. Additionally, there is no

suggestion to combine the components as is done in these claims. The Examiner's interpretation of what the reference discloses is far different from what is actually disclosed. The only components that are integrally connected in Raney et al. are the tip element and swirl ring. See Raney et al., col. 2, ln 16. This should not be confused with the one-piece integral assembly that is currently claimed. The integral tip and swirl ring disclosed in Raney et al. makes up only one individual piece of the three-piece front-end assembly therein. No suggestion or teaching is made in Raney et al. to further combine the separate parts of the front-end assembly to form an integral one-piece assembly. The Examiner's interpretation of Raney et al. removes statements from the context in which they are given and ignores other disclosure contained therein. Only Applicant's application offers the "suggestion" of the prior art modifications made by the Examiner.

8. CONCLUSION

In view of the above remarks, Appellant respectfully submits that claims 1-27 are patentably distinct over the art of record. Accordingly, Appellant requests that the Board direct that each of the outstanding rejections be withdrawn and that the present Application proceed to issuance.

Respectfully submitted,

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CLAIMS APPENDIX

1. (Original) A plasma torch consumable assembly comprising:

a shield cup;

an electrode integrally connected to the shield cup; and

a tip integrally connected with the shield cup and the electrode to form a one-piece assembly wherein the tip is constructed to secure the one-piece assembly to a torch body.

2. (Original) The assembly of claim 1 further comprising a swirl ring having a first side integrally connected to the electrode and a second side integrally connected to the tip.

3. (Original) The assembly of claim 2 wherein the swirl ring is constructed of one of plastic and ceramic.

4. (Original) The assembly of claim 2 wherein the swirl ring is constructed of a non-conductive material.

5. (Original) The assembly of claim 1 further comprising a shield integrally connected to an end of the shield cup.

6. (Original) The assembly of claim 5 wherein the shield is constructed of one of copper and stainless steel.

7. (Original) The assembly of claim 5 wherein the shield includes one of a gouge shield, drag shield, machine shield, and deflector.

8. (Original) The assembly of claim 1 wherein at least one of the shield cup, the electrode, and tip is reconditionable.

9. (Original) The assembly of claim 1 wherein at least one of the shield cup, the electrode, and tip is replaceable.

10. (Original) The assembly of claim 1 configured to be snap-fittable to a torch body of a plasma cutter.

11. (Original) The assembly of claim 1 wherein the consumable assembly is constructed to be secured to a torch body by rotating one of the torch body and the consumable assembly relative to the other.

12. (Original) A plasma cutter comprising:

a power source configured to condition power into a form usable by a plasma cutting process;

a torch connected to the power source and configured to effectuate the plasma cutting process;

a one-piece consumable assembly comprising:

a cap;

a tip fixedly connected to the cap and constructed to snap-fit the consumable assembly to the torch;

an electrode electrically connectable to the power source and fixedly connected to the cap; and

wherein the one-piece consumable assembly is assembled prior to being connected to the torch.

13. (Original) The plasma cutter of claim 12, wherein the on-piece consumable assembly further comprises a swirl ring fixedly connected to the cap and positioned about the electrode.

14. (Original) The plasma cutter of claim 12, wherein the one-piece consumable assembly further comprises a shield fixedly connected to an end of the cap.

15. (Original) The plasma cutter of claim 14 wherein the shield includes one of a gouging shield and a drag shield.

16. (Original) The plasma cutter of claim 14 wherein the shield is snap-fittable to the cap.

17. (Original) A replacement plasma torch consumable kit comprising:

a shield cup;

an electrode;

a tip constructed to be attached to a torch; and

wherein at least two of the shield cup, electrode, and tip are press-fit to one another.

18. (Original) The kit of claim 17 wherein each of the shield cup, electrode, and tip are secured to one another to form a one-piece assembly.

19. (Original) The kit of claim 17 further comprising a shield, snap connected to the shield cup.

20. (Original) The kit of claim 17 wherein at least one of the electrode, tip, and shield cup is reconditionable.

21. (Original) The kit of claim 17 further comprising a swirl ring having an opening constructed to receive the electrode therein in a press-fit connection.

22. (Original) A method of manufacturing a plasma torch consumable assembly comprising the steps of:

providing an electrode;

providing a tip; and

integrally connecting the electrode within a perimeter of the tip in a single unitary consumable structure.

23. (Original) The method of claim 22 further comprising the steps of providing a shield cup and integrally forming the shield cup in the single unitary consumable structure.

24. (Original) The method of claim 23 further comprising the steps of providing a swirl ring and integrally forming the swirl ring in the single unitary structure.

25. (Original) The method of claim 24 further comprising press-fitting the electrode into the swirl ring and press-fitting the swirl ring into the tip.

26. (Original) The method of claim 22 wherein the step of integrally connecting includes the step of molding the electrode and tip in the single unitary structure with an electrical isolator therebetween.

27. (Original) The method of claim 26 wherein the step of integrally forming includes the step of casting the electrode and tip in the single unitary structure with an electrical isolator therebetween.

EVIDENCE APPENDIX

-- None --

RELATED PROCEEDINGS APPENDIX

-- None --